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The study of boundary-value problems for a singular B-elliptic equation by the method of potentials

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Abstract

In this paper we apply the method of potentials for studying the Dirichlet and Neumann boundary-value problems for a B-elliptic equation in the form δ x″u + B xp 1u + x p -α ∂/∂x p(x p α∂u/∂x p) = 0 , where δx″ = sum p-2 j=1∂ 2/∂x j 2, B xp-1 = ∂ 2/∂x j 2+k/∂x p-1∂/∂/∂x p-1 is the Bessel operator, 0 < α < 1 andk > 0 are constants, p ≥ 3. We prove the unique solvability of these problems. © 2010 Allerton Press, Inc.

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Keywords

B-elliptic equation, Bessel operator, Dirichlet problem, method of potentials, Neumann problem